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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,742	12/20/2001	Sameer D. Mehta	88-1061A	3797

7590

09/05/2003

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EXAMINER

LEE, RIP A

ART UNIT

PAPER NUMBER

1713

DATE MAILED: 09/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/027,742

Applicant(s)

MEHTA ET AL.

Examiner

Rip A. Lee

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 3-9 and 14-20 is/are allowed.
- 6) ☒ Claim(s) 10-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

This office action follows a response filed on June 30, 2003. Applicants have amended claims 1, 3-5, 8-11, 14, and 17. In particular, claims have been amended to limit the quaternary ammonium intercalant to dimethyl dehydrogenated tallow ammonium salts. The ethylene based resin is further defined to include ethylene homopolymer and C₂/α-olefin copolymers. Claim 2 was canceled.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,717,000 to Karande *et al.* for the same reasons set forth in the previous office action (see Paper No. 6).

Briefly, Karande *et al.* teaches a composition comprising organophilic clay dispersed in an olefinic polymer having polar functionality (claim 1). The organophilic clay, Claytone HY, is montmorillonite intercalated with dimethyl dihydrogenated tallow ammonium ions (claims 4 and 5, col. 6, lines 37-39). The olefinic polymer is ethylene-vinyl acetate copolymer (claim 13) such as Escorene polymers (col. 4, line 34), which contain about 6-18 wt % of vinyl acetate units. The compositions shown in the examples contain about 4.5 wt % of clay material. Therefore, the subject matter of the present claims is disclosed fully in the prior art.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,717,000 to Karande *et al.*

The reference is silent with respect to melt index and complex viscosity ratio measurements of the overall composition. However in view of the fact that the prior art composition and that described in the present claims are essentially the same, a reasonable basis exists to believe that the composition of Karande *et al.* also exhibits the rheological properties presently claimed. Since the PTO can not conduct experiments, the burden of proof is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Response to Arguments

6. The Applicants traverse the rejection of claims 1-4, 6, 7, and 9 under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wang *et al.* (Polymer 2001).

A declaration under 37 C.F.R. 1.131 was submitted as evidence to show that the instant invention was conceived and was reduced to practice by Applicants prior to the earliest date of appearance of the Wang *et al.* reference. As such, Wang *et al.* does not qualify as prior art. Therefore, the rejection is not valid.

7. The Applicants traverse the rejection of claim 10 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,521,690 to Ross *et al.*

The Applicants submit that the claim is not anticipated by the prior art because the clays in Ross *et al.* have also been intercalated with anionic organic material. Present claim 10 recites,

“0.5 to 12 weight percent of an organically modified clay *consisting* of a smectite clay that has been ion-exchanged and intercalated with a dimethyl dehydrogenated tallow quaternary ammonium ion.”

Use of the word, “consisting,” is interpreted to be exclusionary. The clays of the present invention, then, are intercalated with dimethyl dehydrogenated tallow quaternary ammonium ions only. In this regard, the rejection has been withdrawn.

Accordingly, the rejection of claims 11-13 as being unpatentable over Ross *et al.* in view of Karande *et al.* has also been withdrawn.

8. The Applicants traverse the rejection of claims 1-5, 7, and 8 under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Karande *et al.* or Ross *et al.*

The two rejections have been overcome by amendment because claim 1 presently states that the ethylene based resin is limited to ethylene homopolymer and C₂/α-olefin copolymers.

9. The Applicants traverse the rejection of claim 14 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,462,122 to Qian *et al.* and the rejection of claims 14 and 17 under 35 U.S.C. 102(e) as being anticipated by U.S. 2001/0033924 to Qian *et al.*

The two rejections have been overcome by amendment since the claims presently state that the quaternary ammonium intercalant is a dimethyl dehydrogenated tallow ammonium compound.

10. The Applicants traverse the rejection of claims 10-13 as being anticipated by or, in the alternative, as obvious over U.S. Patent No. 5,717,000 to Karande *et al.* The Applicant's arguments have been considered fully, but they are not persuasive.

The Applicant's submit that the claims are not anticipated by the prior art because the compositions of Karande *et al.* are foams. This is not entirely correct because the claims are directed to an ethylene copolymer composite. The term "composite" is neither indicative nor limiting with respect to shape, form, or structure. Therefore, the subject matter of the claims is still taught by the prior art.

Allowable Subject Matter

11. Claims 1 and 3-9 are allowed.

The invention described in present claim 1 relates to an ethylene polymer composite comprising:

(a) 76-99.25 wt % of an ethylene homopolymer or ethylene/C₃₋₈ α -olefin copolymer,

(b) 0.5-12 wt % of organically modified clay consisting of a smectite clay that has been ion-exchanged and intercalated with a dimethyl dehydrogenated tallow quaternary ammonium ion, and

(c) 0.25-12 wt % of an ethylene polymer compatibilizing agent selected from the group consisting of ethylene-vinyl carboxylate copolymers and polymers of ethylene having from 0.1 to 9 wt % ethylenically unsaturated carboxylic acid or derivative monomer copolymerized or grafted;

the weight ratio of (b) to (c) ranging from 1:5 to 1:0.1.

To date, use of maleic anhydride modified polyethylene as compatibilizer in polyolefin nanocomposite compositions is limited to the prior art of Wang *et al.* Applicants have shown *via* declaration under 37 C.F.R. 1.131 that the instant invention was conceived and was reduced to practice by Applicants prior to the earliest date of appearance of Wang *et al.* Use of maleic anhydride modified propylene has been known in the art, and indeed, such embodiments abound in the literature (see IDS references). Based on a comprehensive review of the prior art, it is deemed that the present invention is allowable because it would not have been obvious to use maleic anhydride modified polyethylene, especially in combination with clay ion-exchanged with dimethyl dehydrogenated tallow ammonium compounds.

Art Unit: 1713

Claims 3-9 describe meaningful developments related to the Applicant's invention. Since these depend from claim 1, they are also allowed.

Claims 14 and 17 are allowed.

The inventions described in claim 14 relates to a concentrate comprising 20-70 wt % of carrier resin selected from ethylene homopolymer and copolymers of ethylene with C₃₋₈ α -olefin, vinyl C₂₋₄ carboxylate, or C₁₋₄ alkyl (meth)acrylate comonomers, and 30-80 wt % of additives comprising an organically modified clay consisting of smectite clay that has been ion-exchanged and intercalated with a dimethyl dehydrogenated tallow quaternary ammonium ion. Claim 17 describes an embodiment in which the concentrate carrier resin is ethylene-vinyl acetate copolymer.

The claim is allowed over the closest prior art, Karande *et al.* because the reference does not teach the manufacture of concentrates. Since the compositions are used as foams, one having ordinary skill in the art would not have found it obvious to modify the compositions of the prior art in order to arrive at the subject matter of present claims 14 and 17.

Dependent claims 15, 16, and 18-20, *ipso facto*, are also allowed.

Art Unit: 1713

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

The prior art made of record but not relied upon is considered pertinent to the Applicant's disclosure. The following references have been cited to show the state of the art with respect to polyolefin-clay nanocomposites.

U.S. Patent No. 6,610,770 to Ross *et al.*

U.S. Patent No. 6,414,070 to Kausch *et al.*

U.S. Patent No. 6,403,231 to Mueller *et al.*

U.S. Patent No. 6,300,398 to Jialanella *et al.*

Art Unit: 1713

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (703)306-0094. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (703)308-2450. The fax phone number for the organization where this application or proceeding is assigned is (703)746-7064. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

ral

August 28, 2003



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